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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,857	01/17/2004	Boris Kobrin	MS-001.US (1285-100)	8766

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EXAMINER

LUND, JEFFRIE ROBERT

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,857

Applicant(s)

KOBRI ET AL.

Examiner

Jeffrie R. Lund

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/05; 10/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-10, drawn to an apparatus, classified in class 118, subclass 715.
 - II. Claims 11-25, drawn to a method, classified in class 427, subclass 248.1.

The inventions are distinct, each from the other because of the following reasons:

Claim Objections

2. Claim 1 is objected to because of the following informalities: in the last line of claim 1 “,during” should read --chamber, during--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-10 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 includes the limitations “at least one device which controls coating precursor vapor flow from said at least one coating precursor container into said at least one precursor vapor reservoir” (lines 9 and 10) and “a corresponding device which controls vapor flow from said at least one precursor container which corresponds with said at least one coating precursor vapor reservoir” (lines 18 and 19). It is not clear if these are two different devices (i.e. a device and a corresponding device) or if they are all the same device (i.e. a device and corresponding to said device). The drawings only

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disclose one device (valve 132) to control the flow between the precursor container and the precursor reservoir. Furthermore, the references to the "at least one" coating precursor container, coating precursor reservoir, and pressure sensor in the limitation starting on line 16 is confusing. It appears that the Applicant is trying to claim that each coating precursor container has a device that controls the precursor flow and is connected to a respective coating precursor reservoir with a pressure sensor, and a controller that controls the device based on the pressure detected in the precursor reservoir. The Examiner recommends amending claim 1 to claim at least one coating precursor delivery system in general, with each precursor delivery system including a precursor container, a precursor reservoir with a pressure sensor, a device between the container and reservoir and container, and a second device between the reservoir between the reservoir and the processing chamber; and a controller which receives input from the pressure sensor to control the first device etc. The Examiner invites the applicant to contact the Examiner with any questions regarding this suggestion.

Claim 1 recites the limitation "consisting essentially of" in line 4. It is not clear what is excluded by this limitation. The specification and claims do not provide a clear indication of what the basic and novel characteristics actually are and what additions will materially change the characteristics of the Applicant's invention, therefore, for the purpose of examination "consisting essentially of" will be construed as equivalent to "comprising." See, e.g., PPG, 156 F.3d at 1355, 48 USPQ2d at 1355. (Also see MPEP 2111.03)

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2, 9/1, 9/2, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hatano, US Patent 5,989,345.

Hatano teaches a deposition apparatus that includes: a precursor container 22 heated by a heater 28; precursor vapor reservoir 32; a valve 38D which controls the precursor flow to the precursor vapor reservoir 32 from the precursor container; a pressure sensor 60; a controller which receives information from the pressure sensor and controls the valve to when the desired pressure is reached; a process chamber 18; and a valve 38E that controls the precursor flow into the process chamber. The specific thickness of the coating is an intended use of the apparatus, and the apparatus of Hatano is inherently capable of depositing a coating of the thickness claimed. (Entire document, specifically, figure 1)

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of

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the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 2-8, 9/4, 9/5 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano, US Patent 5,989,345.

Hatano was discussed above.

Hatano differs from the present invention in that Hatano does not teach a plurality of process gas supply systems for other precursors and catalysts.

Many types of precursor materials and catalysts are known in the art and commonly used to deposit desired materials.

The motivation for duplicating the gas supply system of Hatano is to enable Hatano to supply multiple precursors, and other gases such as catalysis in order to deposit multiple types of materials. Furthermore, it has been held that the duplication of parts is obvious (see *In re Harza* 124 USPQ 378).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to duplicate the gas supply system of Hatano to supply multiple precursors and catalysts to the processing chamber.

10. Claims 1-10, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable

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over Sneth et al, US Patent 6,503,330 B1, in view of Hatano, US Patent 5,989,345.

Sneth et al teaches a deposition system that has a plurality of precursors and catalysts located in chemical manifold section 40 and 41.

Sneth et al differs from the present invention in that Sneth et al does not teach that each of the precursor or catalyst sources in the chemical manifold sections have a precursor container heated by a heater; precursor vapor reservoir; a valve which controls the precursor flow to the precursor vapor reservoir from the precursor container; a pressure sensor; a controller which receives information from the pressure sensor and controls the valve to when the desired pressure is reached; and a valve that controls the precursor flow into the process chamber.

Hatano teaches a precursor container 22 heated by a heater 28; precursor vapor reservoir 32; a valve 38D which controls the precursor flow to the precursor vapor reservoir 32 from the precursor container; a pressure sensor 60; a controller which receives information from the pressure sensor and controls the valve to when the desired pressure is reached; a process chamber 18; and a valve 38E that controls the precursor flow into the process chamber.

The motivation for adding the gas supply system of Hatano to the apparatus of Sneth et al is provide a specific gas supply system for the apparatus as required by Sneth et al but only generically described by Sneth et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the gas supply system of Hatano to the apparatus of Sneth et al.

Response to Arguments

11. Applicant's arguments filed November 28, 2005 have been fully considered but they are not persuasive.

In regard to the assertion that the term "consisting essentially of" narrows the scope of claim 1, the Examiner disagrees. In order for the term "consisting essentially of" to limit the claims the specification must clearly indicate what the basic and novel characteristics are, and the Applicant must show that the addition components would materially change the characteristics of the Applicant's invention (see MPEP 2111.03). The specification at best suggests that the apparatus must have a precursor container, a valve controlling the flow of the precursor from the precursor container, a precursor reservoir with a pressure sensor, a valve controlling the flow of the precursor from the precursor reservoir, and a controller controlling the progress. It does not, however, teach or suggest additional parts and systems would materially change the characteristics of the invention. In fact, the apparatus as claimed would not function without number other elements that are suggested but not claimed, i.e. the vacuum system, the purge system, the plasma systems, etc, all of which include many additional valves and control switching problems. Hatano teaches the basic system i.e. a precursor container 22, a valve 38D controlling the flow of the precursor from the precursor container, a precursor reservoir 32 with a pressure sensor 60, a valve 38E controlling the flow of the precursor from the precursor reservoir, and a controller 70 controlling the progress. The additional valves provide connection to a bypass pipe connecting the source to an exhaust system, and a chamber purge/carrier gas system.

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None of these systems materially change the Applicant's invention. The Examiner further notes that:

- a. That the arguments directed to using or not using a carrier gas involve the way in which the apparatus is used. The carrier gas of Hatano is not used in the manner argued by the Applicant, specifically, it is used to push the precursor into the processing chamber and maintain the pressure in the processing chamber. It is not used in any manner to meter the precursor as is typically done in the bubbling or evaporation art, and argued by the applicant.
- b. There is no teaching or suggestion in the specification that the addition of a carrier gas and its associated valves and pipes would materially change the applicant's invention.
- c. The method taught by Hatano is different from the method suggested by the Applicant. However, the claimed invention is an apparatus and not a method, and it has been held that: claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danley*, 120 USPQ 528, 531, (CCPQ 1959); "Apparatus claims cover what a device is, not what a device does" (Emphasis in original) *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990); and a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus " if the prior art apparatus teaches all the structural limitations of the claim *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). Also see

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MPEP 2114. It should also be noted that the apparatus of Hatano is capable of functioning in the same manner by merely keeping valve 38C closed when the precursor is supplied to the processing chamber.

d. It is true that the apparatus of Hatano is more complicated than the claimed invention, i.e. has more parts. However, adding these parts does not materially change the characteristics of the Applicant's invention. Furthermore, they would provide additional benefits such as the ability to purge the precursor reservoir and chamber (suggested by Applicant as desirable).

In regard to the argument that Hatano does not teach a coating precursor with a vapor pressure of less than about 150 torr at a temperature of 25°C, the Examiner disagrees. Hatano et al teaches a coating precursor i.e. TiCl_4 that has a vapor pressure of about 13 torr at 25°C. (See product data sheet, provided in Notice of References Cited)

In regard to the arguments directed to Sneth et al in view of Hatano, the Examiner notes that:

- a. The arguments regarding the mixing of precursors with a carrier gas, premixing precursors, or converting the precursors into a plasma are method limitations, and are moot because they are not claimed, and even if they were claimed the apparatus of Sneth et al and Hatano can function as argued.
- b. The location of the remote plasma source is not claimed, so the remote plasma source of Sneth et al reads on the claims, i.e. attached to the processing chamber.

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- c. Applicants teach a mixing baffle 205 in figure 2. If the catalyst and precursor are not supplied at the same time and mixed, they will not react with each other as required.
- d. The method of coating does not determine the structure of the apparatus. The apparatus of Sneth et al and Hatano are capable of functioning in the taught manner and performing the taught method.
- e. The “complex switching valve systems, mixing manifolds, and in-line plasma creation from process gas sources of the kind illustrated in the Hatano and Sneth et al, respectively, are not present in applicant’s apparatus” because they are not claimed. These systems are referred to in the specification, and the claimed apparatus will not function with out these elements. For example, without a complex valve system, how are the precursor, purging, and plasma gases controlled?
- f. The functioning of the exhaust system is moot because it is an intended use of the apparatus, and because it is not claimed. The apparatus of Sneth et al and Hatano are capable of functioning as argued.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

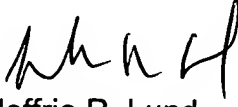
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MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrie R. Lund whose telephone number is (571) 272-1437. The examiner can normally be reached on Monday-Thursday (6:30 am-6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeffrie R. Lund
Primary Examiner